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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No.	:	10/691,113
Cnfrm. No.	:	5325
First Named Inventor	:	Boris Y. Shekunov
Filed	:	October 22, 2003
Title	:	METHOD AND APPARATUS FOR PRODUCING PARTICLES VIA SUPERCRITICAL FLUID PROCESSING
TC/A.U.	:	1723
Examiner	:	Joseph W. Drodge
Docket No.	:	FER-14651

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY BRIEF**

Sir:

This Reply Brief is filed in accordance with 37 C.F.R. §41.41 in response to the Examiner's Answer mailed on August 23, 2005.

***Request To Maintain Appeal***

The Examiner's Answer included New Grounds of Rejection with respect to claim 6. In accordance with 37 C.F.R. §41.39(b)(2), applicants respectfully request that the appeal be maintained. The New Grounds of Rejection is addressed in the Reply Argument below:

### Reply Argument

In the Examiner's Answer, claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over Johnson et al., U.S. Pat. App. Pub. No. US2004/0091546 A1, in view of Holl et al., U.S. Pat. No. 6,471,392 B1. Johnson et al. was discussed at length in the Second Amended Appeal Brief and thus need not be further described herein.

Holl et al. discloses an apparatus for processing materials that employs two cylindrical members, one mounted within the other, defining an annular processing chamber (see Abstract). The outer cylinder is preferably stationary (a stator), while the inner cylinder preferably rotates (a rotor) (see Abstract). A first reactant is fed into the annual processing chamber through an inlet 14 together with a second reactant (see col. 3, lines 27-32). Holl et al. specifically teach that "[i]f separate inlets 14 are used then they must be in close tangential proximity to one another" (col. 3, lines 32-34).

The Examiner contends that one of skill in the art would have been motivated to use the apparatus for processing materials disclosed in Holl et al. to precipitate particles according to the method disclosed in Johnson et al. to avoid introducing Taylor vortices between the two reactants. Applicants respectfully submit that the combination of Johnson et al. and Holl et al. fails to establish a *prima facie* case of obviousness with respect to claim 6.

Claim 1, from which claim 6 depends, claims:

A method of producing particles comprising the steps of:  
providing a supercritical fluid;  
providing a first solution, the first solution comprising a first solute  
dissolved or dispersed in a first solvent that is at least partially  
soluble in the supercritical fluid;  
flowing the supercritical fluid through a chamber having a rotating rotor  
disposed therein;  
dispensing the first solution into a mixing zone within the chamber while  
the supercritical fluid is flowing through the chamber, the mixing  
zone being defined as a space between an inner wall of the  
chamber and an adjacent surface of the rotating rotor; and  
collecting precipitated particles of the first solute from a mixture  
comprising the supercritical fluid and the first solvent.

Claim 6 depends from claim 1 and further claims:

The method of producing particles according to claim 1 wherein the inner wall of the chamber is spaced apart from the surface of the rotating rotor a distance of from about 0.1 mm to about 2.5 mm.

The word "supercritical" does not appear at all in Holl et al. The word "supercritical" appears only once Johnson et al., namely in paragraph [0063], the relevant portion of which is set forth below (obvious typographical errors in the original corrected):

Using flash precipitation process described herein, nanoparticles are formed in the final mixed solution. The final solvent containing the nanoparticles can be altered by a number of post treatment processes, such as but not limited to dialysis, distillation, wiped film evaporation, centrifugation, lyophilization, filtration, sterile filtration, extraction, supercritical fluid extraction, or spray drying. The processes typically occur after the nanoparticle formation but could also occur during the nanoparticle formation process.

It is the Examiner's position that the last above-quoted sentence in paragraph [0063] of Johnson et al. can be fairly read as teaching the use of supercritical fluid as a "non-process solvent" to precipitate particles from a solution comprising a solute dissolved in a "process solvent". Applicants respectfully disagree. The teachings referenced in paragraph [0063] of Johnson et al. clearly relate to the use of supercritical fluid extraction as a post-treatment process to alter the final solvent containing the nanoparticles. Johnson et al. does not fairly teach or suggest that a supercritical fluid can be used as a "non-process solvent", or that nanoparticles can be formed by supercritical fluid extraction in a continuous or batch flash mixer. Supercritical fluid extraction is contemplated only as a post-treatment process for altering the final solvent containing the nanoparticles formed by flash precipitation.

Applicants respectfully submit that the combination of Johnson et al. and Holl et al. fails to fairly disclose all of the limitations of claim 6 in that it does not teach flowing a supercritical fluid through a chamber and dispensing a solution comprising a solute dissolved in a solvent that is at least partially soluble in the supercritical fluid into a mixing zone within the chamber

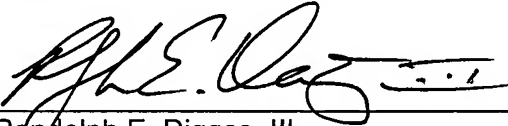
while the supercritical fluid is flowing through the chamber, the mixing zone being defined as a space between an inner wall of the chamber and an adjacent surface of the rotating rotor, wherein the inner wall of the chamber is spaced apart from the surface of the rotating rotor a distance of from about 0.1 mm to about 2.5 mm. These elements cannot be found in Johnson et al., Holl et al. or in a fair combination of the two references.

### ***Conclusion***

In view of the foregoing, it is respectfully submitted that claims 1-19 and 21-37 are allowable over the prior art references of record, and a ruling from the Board to that effect is therefore respectfully requested.

Respectfully submitted,

RANKIN, HILL, PORTER & CLARK, L.L.P.

A handwritten signature in dark ink, appearing to read "R.E. Digges, III", is written over a horizontal line.

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